Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 3 and 8-11. These sheets, which include Figs. 3 and 8-11, replace the original sheets including Figs. 3 and 8-11.

Attachment: Replacement Sheets
Annotated Sheets Showing Changes

REMARKS/ARGUMENTS

Claims 1-10 are pending, of which claims 6-10 have been withdrawn. Claims 1 and 2 have been amended. The specification and the drawings have been amended to correct minor informalities. No new matter has been introduced. Applicants believe the claims comply with 35 U.S.C. § 112.

Rejections under 35 U.S.C. § 102(b)

Claims 1-3 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Fukuzawa et al. (U.S. Patent No. 6,338,899).

Applicants respectfully submit that independent claims 1 and 2 are patentable over Fukuzawa et al. because, for instance, Fukuzawa et al. does not disclose or suggest a magnetic domain control film formed above and in contact with the magnetic domain control underlayer. This feature is clearly shown in Fig. 1 (magnetic domain control film 10 formed above and in contact with the magnetic domain control underlayer 9).

Referring to one embodiment of the present invention as shown in Fig. 6, a lower magnetic shield 7, a lower dielectric gap layer 8, and a magnetic domain control underlayer 9 are formed on a substrate (not shown). The thickness of the magnetic domain control underlayer 9 is defined as tUL (in nm units). A magnetic domain control film 10 is formed above and in contact with the magnetic domain control underlayer 9. The use of magnetic domain control underlayer 9 changes the MR ratio, the free layer coercive force Hcf, and the interlayer coupling magnetic field Hint. See, e.g., Figs. 6 and 8; paragraphs [0029], [0032], and [0043].

In Fukuzawa et al., a lower shield 11 is provided on a substrate 10. A spin valve device 13, located above the lower shield 11, comprises a spin valve film 14 and a pair of longitudinal bias films 15 and electrodes 16. The spin value film 14 comprises nonmagnetic underlayers 141, 142, an antiferromagnetic layer 143, a pinned magnetic layer 144, an interlayer 145, a free layer 146, and a protective film 147. See, e.g., Fig. 17, and column 38, lines 3-11.

Fukuzawa et al., however, does not disclose or suggest a magnetic domain control underlayer. The Examiner alleges that nonmagnetic layer 141 of Fukuzawa et al. is a magnetic domain control underlayer. Nonmagnetic underlayer 141 is an underlayer of the antiferromagnetic layer 143 and is **not** an underlayer of longitudinal bias films 15 to be in contact with the longitudinal bias films 15. This is clear since the longitudinal bias films 15 are formed on the antiferromagnetic layer 143 and not on the nonmagnetic underlayers 141, 142 as shown in Fig. 17.

Claim 3 depends from claim 1, and is submitted to be patentable as being directed to additional features of the invention.

For at least the foregoing reasons, Applicants respectfully submit that claims 1-3 are patentable over the cited art.

Rejections under 35 U.S.C. § 103(a)

Dependent claims 4-5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fukuzawa et al. (U.S. Patent No. 6,338,899).

Applicants note that Fukuzawa et al. fails to disclose or suggest a magnetic domain control film formed above and in contact with a magnetic domain control underlayer. Fukuzawa et al. merely discloses a spin value film 14 comprising nonmagnetic underlayers 141, 142, an antiferromagnetic layer 143, a pinned magnetic layer 144, an interlayer 145, a free layer 146, and a protective film 147.

For at least the foregoing reasons, Applicants respectfully submit that claims 4-5 are patentable over the cited art.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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RL:cl
60815093 v1

Annotated Sheet Showing Changes

FIG.3

FIG.3(a) (PRIOR ART)

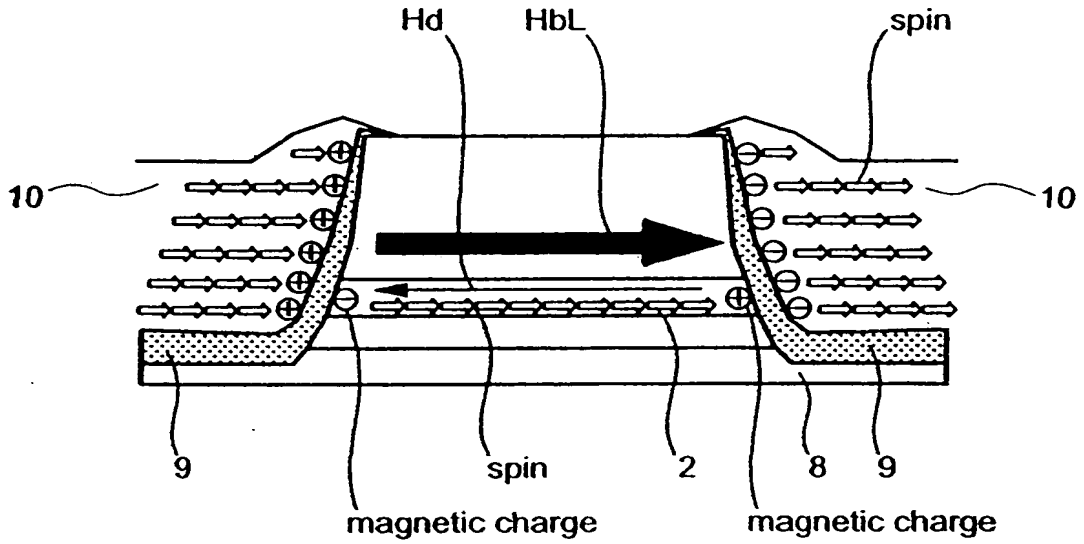
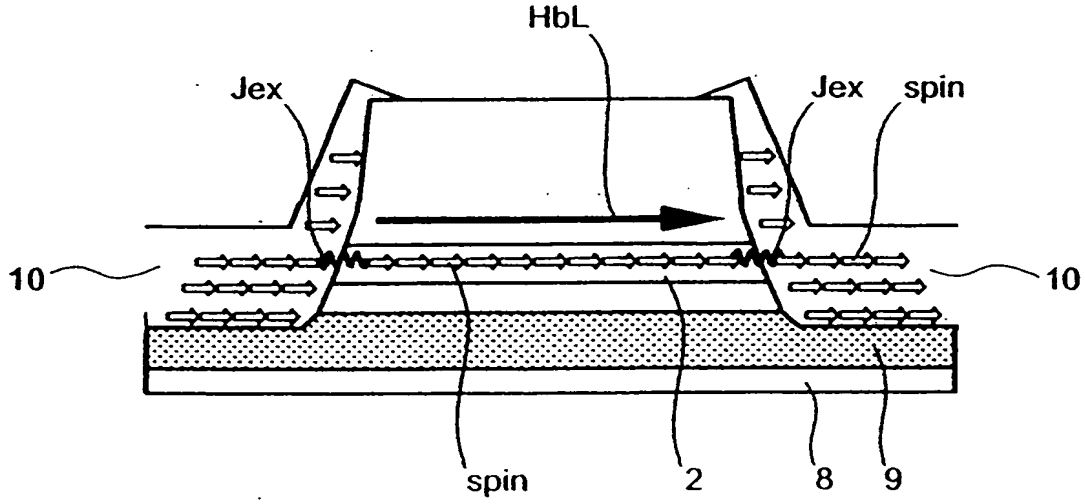


FIG. 3(b)



Annotated Sheet Showing Changes

FIG.8

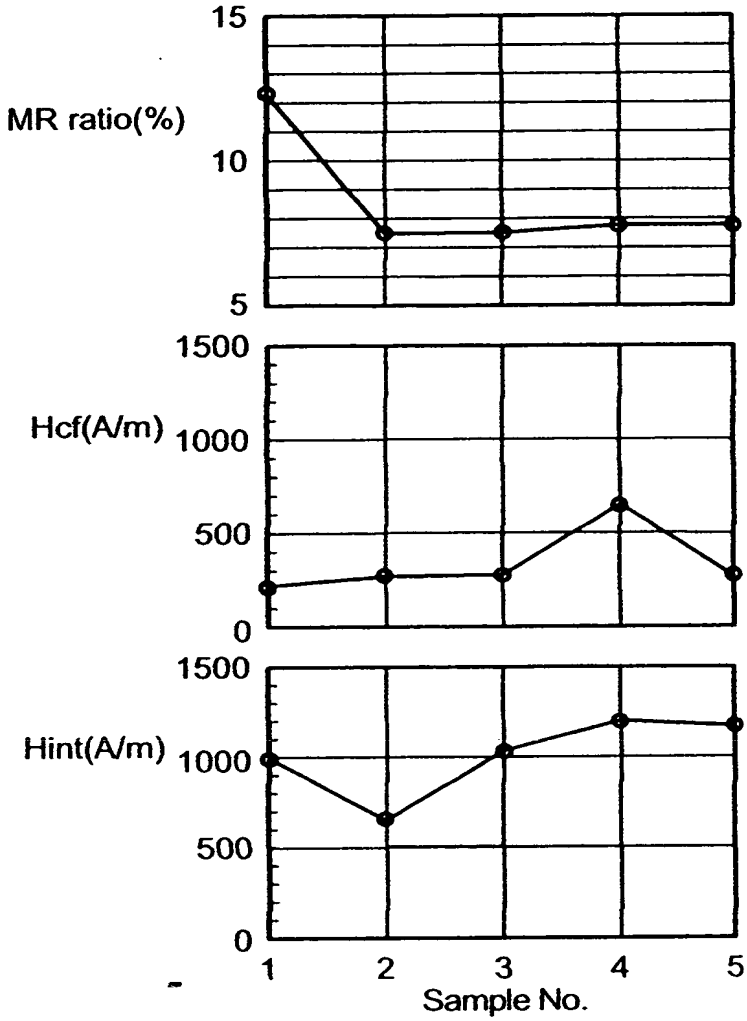


FIG. 8 (a)

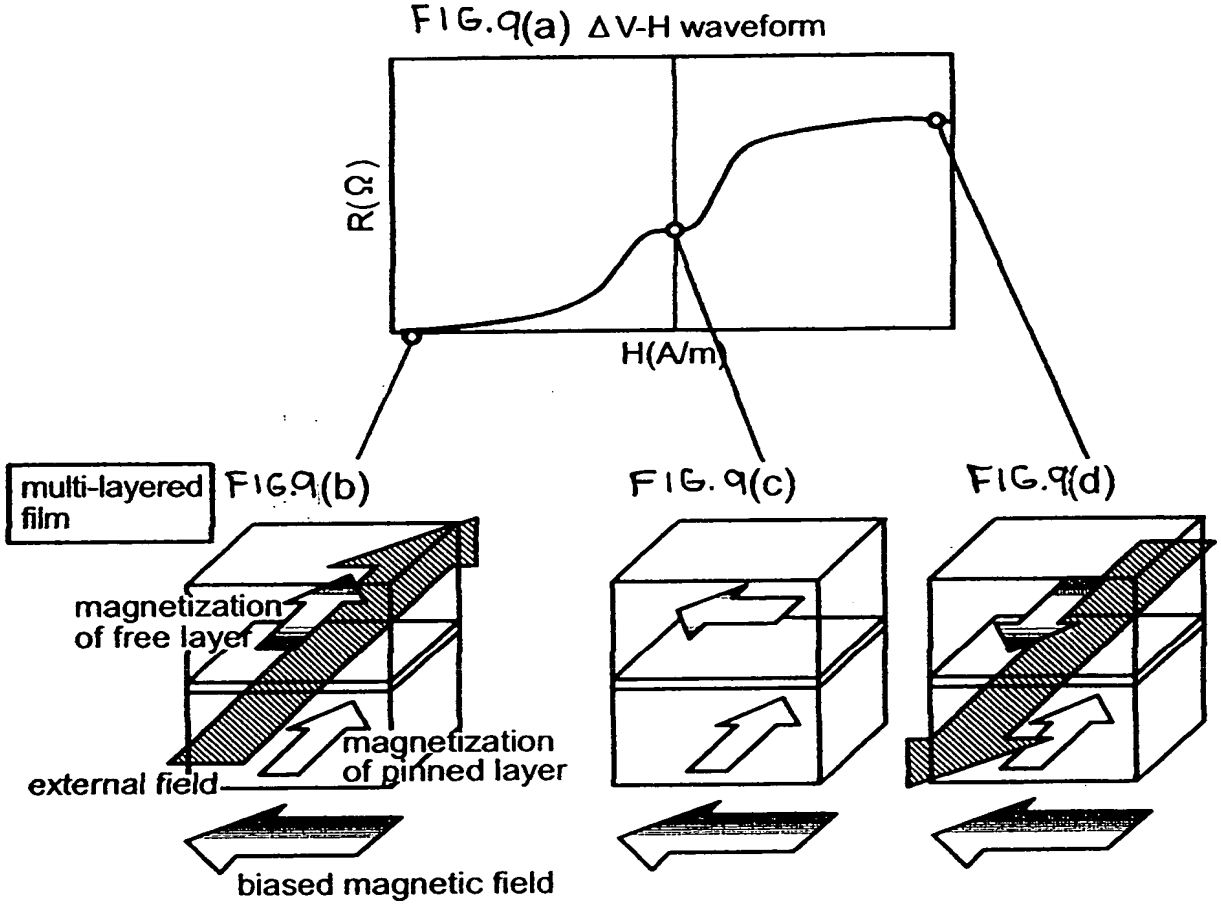
FIG. 8 (b)

FIG. 8 (c)

Sample No.	Magnetic domain control underlayer	Pretreatment for underlayer deposition	Underlayer
1	-	Atmospheric exposure	Underlayer A
2	Cr 10nm	Atmospheric exposure	Underlayer A
3	Cr 10nm	Atmospheric exposure	Ta 1 nm → Atmospheric exposure → underlayer A
4	Cr 10nm	Atmospheric exposure → plasma oxidation	Underlayer A
5	Cr 10nm	Atmospheric exposure → plasma oxidation	Ta 1 nm → Atmospheric exposure → underlayer A

Annotated Sheet Showing Changes

FIG.9



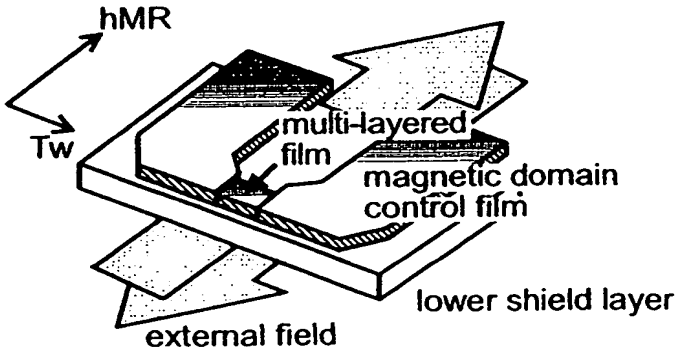


FIG. 9(e)

Annotated Sheet Showing Changes

FIG.10

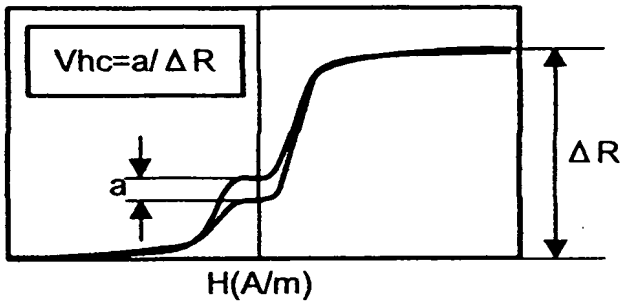


FIG. 10(a)

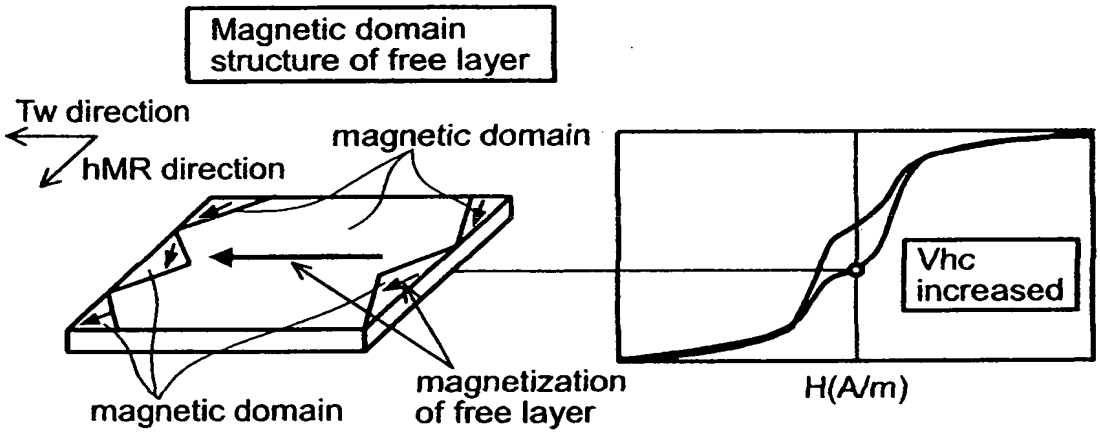
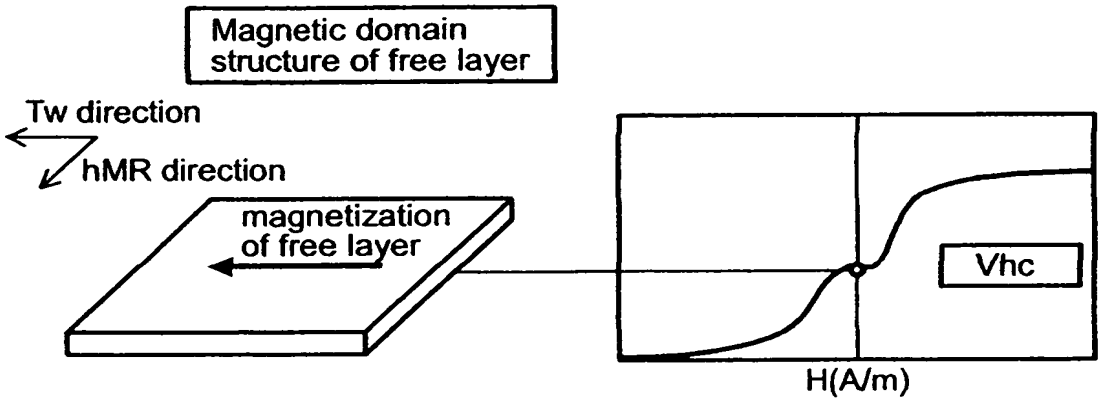


FIG. 10(b)



Annotated Sheet Showing Changes

FIG.11

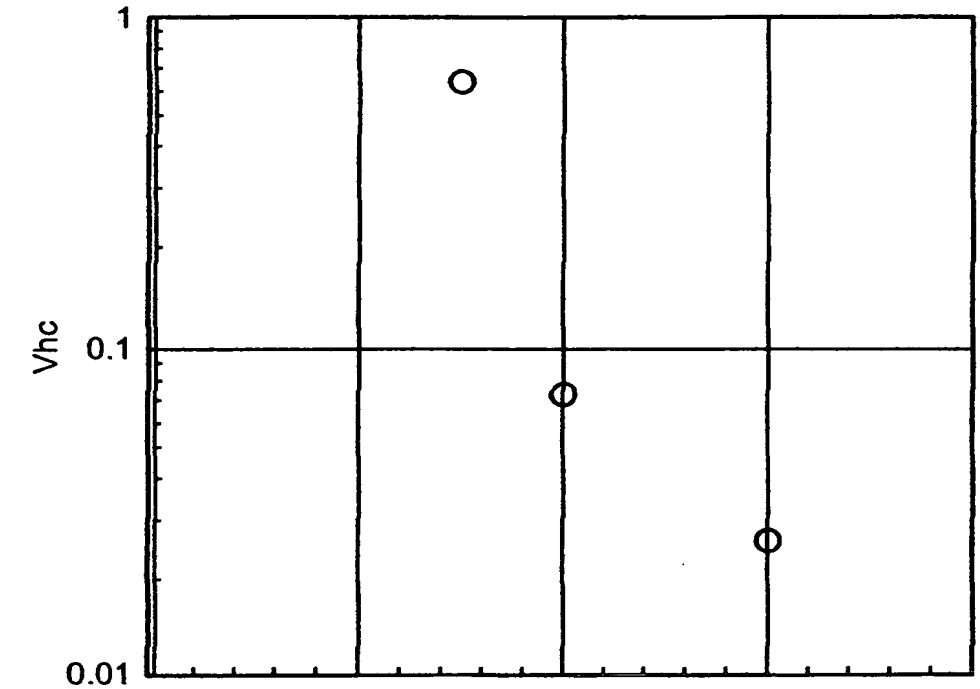


FIG. 11(a)

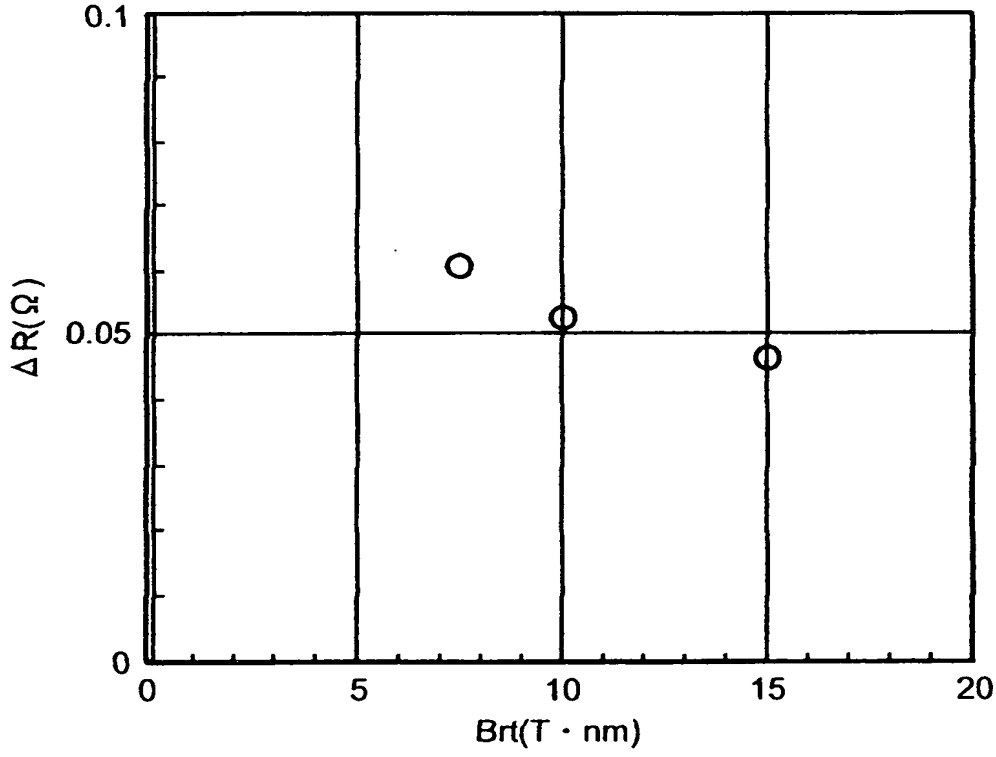


FIG. 11(b)